

## **TEDDY NICHOLS PERSONAL INJURY INVESTIGATIVE REPORT**

### **BACKGROUND**

At the request of the law firm of Schroeder, Maundrell, Barbieri & Powers, the undersigned consultant conducted an investigation into the circumstances surrounding the injury to Teddy Nichols during the period of 28 August 2001 as described by him in his deposition. The injury was reported to have been suffered during a barge unloading operation at the Phillip Sporn Power Plant at New Haven, West Virginia.

### **CONDUCT OF THE INVESTIGATION**

The investigation was conducted by review of the following documents:

1. Deposition of Teddy Nichols dated 10 July 2002.
2. Deposition of Timothy Ramey dated 10 July 2002.
3. Deposition of Mark Anthony Clay dated 30 July 2002.
4. Deposition of Michael Weisend dated 30 July 2002.
5. Deposition of Steve Edens dated 26 November 2002.
6. Deposition of Jeff Darst dated 12 February 2003.
7. Deposition of Charles Johnson dated 12 February 2003.
8. Continued Deposition of Mark Anthony Clay dated 12 February 2003.
9. Stipulation of Facts dated 3 February 2004.
10. Defendant's Rule 26(a)(1) Disclosures dated 20 March 2002.
11. Defendant's First Supplement to Rule 26 (a)(1) Disclosures dated 28 May 2002.
12. Defendant's Answers to Plaintiff's Second Set of Interrogatories to Defendants dated 13 February 2002.
13. Defendant's Supplemental Answers to Plaintiff's Second Set of Interrogatories dated 13 February 2002.
14. Defendant's Responses to Plaintiff's Second Request for Production of Documents dated 2 July 2002.
15. Expert report of Dr. Guy Herren dated 19 January 2004.
16. Expert report of Ronald Campana dated 20 December 2003.
17. Expert report of Dr. Mark Strauss dated 12 March 2004.

In addition to the above, I attended an inspection of the Phillip Sporn Power Plant on 25 September 2003 and witnessed the attempt of plaintiff's experts to recreate the accident scenario. Further, I reviewed a video taken by William Schroeder taped during the attempted recreation.

### **BARGE SHIFTING OPERATION**

The following is a description of the barge shifting operation at the Phillip Sporn Power Plant.

The operational area consists of a crane situated on the bank which utilizes a clam shell bucket to empty out open hopper barges which are placed directly below it. The barges are moved upstream or down stream by means of wire cables (called haulout cables) attached to each end of the barge which lead to a sheave on a cell located well beyond the barge. The other end of each cable is attached to a winch head which is directly geared to an electric drive motor. The winches are

operated by the crane operator and are independent of each other. The movement of the barge for unloading is solely under the control of the crane operator.

When a barge unloading is completed, the fleet towboat brings a loaded barge along side outboard of the empty barge. The crane drops the bucket into the loaded barge and hauls the bucket towards shore to hold the loaded barge against the empty which is against the cells. The towboat is faced up to the loaded barge on the down stream end. The towboat then unfaces from the loaded barge and shifts to the empty barge facing up to it. Then in cooperation with the crane operator, who runs the down stream wire out, the towboat moves the empty barge upstream with the down stream haulout wire being played out. The tow then backs down and the downstream haulout wire is unhooked from the empty and is tied off to a handy line. The towboat then moves forward a short distance thus creating a catenary in the upstream haulout wire. A deck hand then removes the upstream haul out wire with a tag line and walks it over to the outboard side of the empty barge and hands it down to the deck hand on the loaded barge who makes it fast to the forward timberhead on the loaded barge. The empty barge now being freed of both the upstream and downstream haulout cables is then withdrawn downstream and the crane brings the loaded barge against the cells and the downstream haulout cable is made fast to the downstream timberhead.

### ***THE INJURY***

There is conflicting testimony as to the precise time and date as to when and how the injury occurred. It is beyond the scope of this report to attempt to sort out those discrepancies. However, Nichols now claims that during the handing off of the upstream haulout cable, the cable end jerked thus injuring his shoulder.

### ***THE HANDING OFF OPERATION***

All of the testimony from those crewmen who have performed the operation as well as Teddy Nichols described the handing off of the upstream haulout cable end as just that, a handing off where the deckhand on the loaded barge would use one hand for the tag line and the other hand for grasping the eye of the cable when it was handed down to him. There was discussion about there not being enough slack at times which made the taking of the cable eye from the timberhead on the empty barge harder and requiring a heavy pull to get the cable off and over to the loaded barge. In reality, it is only the towboat operator that can make adjustments to provide additional slack by moving the barge forward. The crane operator in attempting to unspool the cable is only going to put more cable on the bottom adjacent to the sheave. The cable is not stiff enough at that length to move so as to give slack at the barge. The deckhand on the empty barge should he not have enough slack can hand signal the towboat operator to move forward thus dropping the barge end of the catenary further onto the bottom and thus shortening the scope of catenary. There is no mechanism for instituting a jerk in the haulout cable. Mr. Nichols testified that there was nothing going on with the movement of the towboat and thus the barge at the time of the injury. There is no evidence that the crane started to take up the haulout cable. Further, Mr. Ramey, who was the deckhand working with Mr. Nichols did not observe a situation during this period which could have been the initiating incident.

### ***25 SEPTEMBER 2003 INSPECTION***

During this inspection, plaintiff's expert Dr. Guy Herren attempted to measure the force exerted on

the haulout line during the handing off operation. He did not measure the force on the line when it was lifted off the timberhead on the empty barge. He tied a line from the end of the tagline of the haulout cable to a tensionmeter. The other end of the tensionmeter was attached by another line to the timberhead on the loaded barge. These lines were led inboard of the timberhead over the bow. A second braided line was also attached to the haulout cable to retrieve everything should the tagline go over the side and the tensionmeter following. The whole assemblage was dropped about two feet from the empty barge. The tensionmeter bounced around but did not record any readings. As the bitter end of the haulout cable was being retrieved, I heard Mr. Nichols say words to the effect that hauling up the haulout cable was a heavier load than the load taking it to the timberhead.

A second trial was made, this time with the tensionmeter lines dropping outboard of the timberhead and the tensionmeter attached directly to the eye of the haulout cable. The cable was dropped again, this time a distance closer to six feet. This time the tensionmeter recorded a reading of 175 pounds. Dr. Herren in so many words indicated that it was not representative of the force felt by a human. Mr. Baun had Mr. Herren hold on to the meter while Baun gave it a strong pull. I did not see where the precise reading was, but from what I could see, the needle never got to the 175 position. Again Mr. Nichols repeated words to the effect that hauling up the cable was harder than taking it to the timberhead. The above procedure was videotape by a videographer working for the plaintiff. No further testing was attempted.

### ***CRITIQUE OF PLAINTIFF'S EXPERT REPORTS***

Dr. Herren in his report used the 175 pound load as the basis for his opinion that Mr. Nichols had suffered overloading of his shoulder and spinal column. This load was introduced into a computer program which calculated forces on particular parts of the body. As mentioned above, Dr. Herren was actually measuring a force that a deck hand would never experience. First, it is doubtful that Mr. Nichols could hold onto the tagline and the eye, even with both hands, and resist a 175 pound pull. If he should have been able to hold onto those lines, then such a force would have swept him off his feet.

Scientifically, the use of the 175 pound force is inappropriate. It is a shock loading from the eye of the cable being brought up short by the line to the timberhead. In short, there is no give which creates the shock. As an example, Calculation 1 illustrates that if a 1 pound weight is dropped 6 feet, it reaches a velocity of 12 feet per second due to gravity. If it is brought up short and decelerated from that velocity to zero in 1 inch, the resulting shock force generated is 28 pounds. Mr. Nichols did not testify that the eye of the cable fell from the top of the empty barge down to the loaded barge but that when he had "ahold" of it, it jerked. The attempted recreation does not present a true picture of the incident as was testified to by Mr. Nichols.

Returning to the mechanics of the handoff. The haulout cable is laying in two catenaries. First is a catenary from the haulout sheave on the cell and the cable draped on the river bed. The second is the catenary between the river bed and the bitter end or eye. The bitter end is not stretched from the sheave out on the cell as there is not enough strength in a human to provide that much force. The cable rests on the bottom in close proximity to the end of the barge and it is the weight of the cable from the bitter end to where it is resting on the bottom which is the catenary that is overcome by the deckhand taking the eye off the timberhead on the empty barge. When the eye is handed down to the deckhand on the loaded barge, more of the cable now rests on the bottom reducing the scope of the catenary and as Mr. Nichols described, there is lesser force in the eye.

Mr. Campana apparently does not understand the principles of a catenary nor does his report reflect an understanding of the mechanical principles of the operation. He parrots the 175 pound force of Dr. Herren and equates that ostensibly to a 175 foot span from the sheave to the barge. He opines that because of that length and a weight of cable of approximately 1 pound per foot, a deckhand is required to potentially hold a minimum of 175 pounds. I doubt if Sumo wrestlers have that kind of balance. Furthermore, the length from the sheave to the head of the barge was stipulated to be 85 feet.

Mr. Campana further obfuscates the issue by pointing out in the Safety Manual contained in Defendants Responses to Plaintiff's Second Request for Production of Documents that two men are required to lift and carry barge wires greater than 35 feet in length. What the Safety Manual is speaking to is rigging wire used for lashing tows, not the haulout cable used in this operation.

### **EXPERT REPORT OF DR. MARK STRAUSS**

Dr. Strauss examined the facility on 5 March 2004. He measured the force necessary to lift the haulout wire eye and found that it ranged from 26.5 to 35 pounds. He further observed the transfer procedure and videotaped it. He found no facet of the operation which would lead him to believe that it either initiated or contributed to Mr. Nichol's injury. He opined as to the expert reports of Dr. Herren and Ronald Campana. He further opined as to the validity of the computer program used by Dr. Herren and Dr. Herren's conclusions derived from those results. I do not share Dr. Strauss's expertise in the area of bio-mechanics and am not qualified to express an opinion in that area. However, Dr. Strauss and I do share the same opinions as to the validity of the attempted tests and resultant measurement.

### **OPINIONS**

It is my opinion that the barge shifting procedure at the Phillip Sporn Power Plant including communications, methods of shifting barges and the equipment, training and methods used by the AEP employess was reasonably safe, consistent with industry practice and seaworthy in all respects.

It is my opinion that Teddy Nichols was provided a reasonably safe place to work.

It is my opinion that the vessel and equipment used for the barge shifting procedure was appropriate, consistent with industry practice and seaworthy.

It is my opinion that the the testing results of Dr. Herren and Ronald Campana do not accurately set forth the forces which a deckhand encounters in performing the work that Teddy Nichols was engaged in, making the opinions expressed by them invalid.

### **RESERVATION**

I reserve the right to modify or change my opinions should further information come to light which should so warrant.

John Deck III

16 March 2004

## NICHOLS CALCULATION

$$S = 1/2 AT^2$$

$$6 = 16.1 T^2$$

$$T = .37 \text{ SEC}$$

$$V = AT$$

$$V = 32.2 \times .37$$

$$V = 12 \text{ FPS}$$

## DECELERATION IN 1 INCH (.08 FEET)

$$V_{\text{AVG}} = \frac{12.0}{2} = 6 \text{ FPS}$$

$$S = V_{\text{AVG}} \times DT$$

$$.08 = 6 \times DT$$

$$DT = .0133 \text{ SEC}$$

$$A = \frac{DV}{DT} = \frac{12}{.0133} = 900 \text{ FPS}^2$$

$$F = MA$$

$$F = \frac{1}{32.2} \times 900$$

$$F = 28 \text{ LB}$$